APPENDIX A

Claims on Appeal

1. A method of providing a silicon micro-needle, the micro-needle having a base adjoining a silicon substrate, a tip remote from said base, and a duct passing from said base to said tip, the method comprising:

a. providing a duct in said silicon substrate; and subsequently

b. selectively removing the substrate from around the duct to provide a micro-needle coincident with the duct.

2 ~~3.~~ A method according to claim 1 wherein a mask is lithographically provided on a substrate of the first material prior to the formation of the duct.

3 ~~4.~~ A method according to claim 3 wherein the mask is used to provide the duct which is fabricated by any one of the following techniques: plasma enhanced etching, laser ablation, light assisted anodisation, ion beam milling, focused ion beam milling.

4 5. A method according to claim 1 wherein the micro-needle is bounded by planes of the first material which have a low etch rate.

5 ~~6.~~ A method according to claim 5 wherein an anisotropic etch is used to selectively remove the first material.

6 ~~7~~. A method according to claim 1 wherein the first material is removed by any one of the following methods: focused ion beam milling, etching combined with a domed resist mask.

17 ~~8.~~ A method of providing a silicon micro-needle, the micro-needle having a base adjoining a silicon substrate, a tip remote from said base, and a duct passing from said base to said tip, the method comprising:

a. selectively removing the silicon substrate to provide a micro-needle; and subsequently

b. providing a duct coincident with the micro-needle.

18 ~~10.~~ A method according to claim 8 wherein the micro-needle is bounded by planes of the first material which have a low etch rate.

19 ~~11.~~ A method according to claim 10 wherein an anisotropic etch is used to selectively remove the first material.

20 ~~12.~~ A method according to claims 8 wherein said micro-needle is formed by any one of the following techniques: focused ion beam milling, etching combined with a domed resist mask.

21 ~~13~~. A method according to claim 8 wherein once the micro-needle has been formed a planar surface is provide covering the micro-needle.

22 ~~14~~. A method according to claim 13 wherein the duct is provided by lithographic processes performed on the planar surface.

23 ~~15~~. A method according to claim 14 wherein once the duct has been provided the planar surface is removed.

~~16~~. A method according to claim 1 wherein the method is arranged to provide a micro-needle whose outer walls are inclined to a plane that is perpendicular to the substrate to which the micro-needles are adjacent.

24 ~~17~~. A method of providing a micro-needle on the surface of a first material, the micro-needle having a base adjoining the first material, a tip remote from said base, and a duct passing from said base to said tip, the method comprising:

a. providing a duct in said first material,

b. lining said duct with a second material, and

c. removing said first material from around said second material leaving a micro-needle fabricated from said second material attached to said first material and upstanding therefrom.

25 19. A method according to claim 17 wherein the second material is any one of the following materials: SiO2, a metal, ceramic, a polymer, a semi-conductor.

26 20. A method according to claim 17 wherein a portion of the second material covering the inside surface of the duct is removed before or whilst the first material is removed from around the second material.

27 21. A method according to claim 17 wherein the first material is removed by etching.

28 22. A method according to claim 17 wherein a mask is lithographically provided on a substrate of the first material prior to the formation of the duct.

29 23. A method according to claim 22 wherein the mask is subsequently u used to control fabrication of the duct.

24. A method according to claim 17 wherein the duct is fabricated using any one of the following processes: plasma based etching, laser ablation, focused ion beam milling, light assisted anodisation of silicon.

25. A method according to claim 17 wherein the second material is provided by any one of the following processes: oxidiation, deposition.

26. A method according to claim 17 wherein the micro-needle is shaped by removing a portion of the second material.

27. A method according to claim 1 in which once the micro-needle has been created the method further includes linking the duct to a reservoir.

28. A method according to claim 27 in which a portion of the first material is removed from a side opposite a side of the first material where the micro-needle has been fabricated.

29. A method according to claim 27 in which the first material is attached to a second piece of material.

12 30. A method according to claim 29 in which the second piece of material has a channel which connects to the duct and links the duct to a reservoir.

12 31. A method according to claim 29 in which the first material has a channel which connects to the duct and links the duct to a reservoir.

13 32. A method according to claim 29 in which the two pieces of material are fabricated from same material.

14 33. A method according to claim 1 in which the micro-projection is fabricated substantially normal to the surface of the first material.

15 34. A method according to claim 1 wherein a surface region of the micro-needle is porosified after the needle has been fabricated.

16 35. A method according to claim 34 wherein the porosification is provided by one of the following techniques: electrochemical anodisation, or immersing the structure is a stain etching solution.